



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: ECL-113

August 28, 2000 RECEIVED IN

Ms. Kathleen Hain, Manager
Environmental Restoration Program
U.S. Department of Energy
Idaho Operations Office
785 DOE Place
Idaho Falls, Idaho 83402

AUG 31

Program Management

Re: EPA review of *Operable Unit 3-14 Tank Farm Soil and Groundwater
Remedial Investigation /Feasibility Study Work Plan (Draft)*

Dear Ms. Hain,

EPA has reviewed the above-referenced document. Comments are enclosed. A conference call should be scheduled after close of the agency review period to resolve comments.

Please call me at (206) 553-0040 if there are any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Kathy Ivy".

Kathy Ivy
Remedial Project Manager

cc: Margie English, IDEQ
Tally Jenkins, DOE-ID

**EPA AUGUST 28, 2000 COMMENTS ON
JUNE 2000 OPERABLE UNIT 3-14 TANK FARM SOIL AND GROUNDWATER
REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN (DRAFT)**

GENERAL COMMENTS

1. There are a number of areas within this document that refer to the status of contaminated soil as either high-level waste or mixed transuranic waste and listed or characteristic RCRA hazardous waste. It should be clarified that the regulatory status of the soil cannot be determined until after it has been characterized as a part of remedial investigations. (KI)
2. This work plan refers, in several places, to contamination in the Snake River Plain Aquifer (SRPA) within the INTEC fenceline. These references appear to define the scope of this remedial action insofar as SRPA groundwater is concerned. However, the work plan does not state how contamination in the SRPA outside the INTEC fenceline will be remedied. This should be stated at an early point in this document, and possibly reiterated wherever the text makes the distinction of the SRPA within, versus outside, the fenceline. (VR)
3. Text in the work plan (Page 1-11) outlines the Tank Farm Soil RI/FS objectives. One of the objectives listed is to determine site-specific Kd values for contaminants of concern (COCs), especially for plutonium isotopes. The Field Sampling Plan (FSP) for the Tank Farm Soils, which is part of this Work Plan, states that field sampling will be divided into two phases, and that the FSP presented in this Work Plan will cover Phase 1, which will not cover leaching studies and other issues pertaining to migration to the aquifer. It is understood that Phase 2 will cover these migration issues. However, the text should clarify whether determining site-specific Kd values will include a literature search, or actual laboratory experimentation with site soils, to determine Kd. There is likely extensive information already available regarding Kd values for other sites at INEEL; however, it is not known how much variability there may be from site to site at INEEL. One possible recent source is from :Grant Environmental, Inc., *Compilation of Sorption Coefficients for Selected Elements on Bentonite and Smectite Clays to Support the Design of an ICDT Attenuation Barrier Waste Area Group 3, Operable Unit 3-13*, published April 2000. Although this document discusses Kd values for clays and bentonite, much lower Kd values would be expected in native soils. This document is thus useful to show bounding Kd values.

Further discussion is needed on the topic of Kds, which will have a significant impact on aquifer modeling results. After discussing and presenting existing information, experimentation may still be needed to support modeling; however, existing information should be investigated before this decision is made.

Also, there is no clear distinction in the Work Plan between Phase 1 and Phase 2 activities for the Tank Farm Soils, although the FSP does make this distinction. It is suggested that the Work Plan make this distinction, to clarify which FSP will cover which phase. The Work Plan does briefly mention Phase 1 and Phase 2 in Section 6 (Schedule), but Section 4 (Work Plan Rationale) should provide planned activities and goals for Phase 1 and Phase 2. (VR)

4. While the Tank Farm Soil FSP describes at least two sets of sampling data which will be collected, not all sample locations are clearly shown in figures. The total number of samples is not clear, either. It is clear is that soil samples will be collected up to a depth of 10 feet below ground surface (bgs) in some locations, and that radiation logging will occur to variable depths in other boreholes.

One set of data will consist of sampling results for soils to a depth of ten feet. These soil samples will be collected from drums which will contain five-foot increments of soils collected during vacuum extraction; composite samples will then be collected from those drums for laboratory analysis. Drummed soil will also be screened by field radiation monitors. Soils will be vacuumed to a depth of 15 feet bgs; the pilot holes thus created will be used to install casings. Of 85 proposed probehole locations, the text suggests that only twenty percent of the probeholes, or 17 locations, will be sampled. In addition, 35 probeholes in known hotspot locations will also be sampled; these 35 locations are not apparently part of the originally proposed 85, which are located on a regular grid. Thus, the total number of probeholes that will be sampled should be 52. However, 51 samples are shown as the total number for analysis, according to Appendix A of the FSP. Also, it appears that the "G1" set of data points is the Tank Farm site-wide set (which should total 17 samples); however, Appendix A only lists 14 of these samples. Figure 7 of the FSP does not identify which probeholes will have samples collected; only the 85 proposed locations on the grid are shown. Please make the text and tables describing numbers of samples agree with each other, and show probeholes for sampling clearly in Figure 7.

The second set of data will include instrument readings of radioactivity at different depths in cased probeholes. This set of data is described in the FSP in Section 4. Text in Section 4.4 states that probeholes will be drilled to basalt for downhole radiation logging purposes. However, in Appendix A of the FSP, the depth of probeholes is listed as ranging from 0 to 58 feet (maximum depth), with most probeholes between 18 and 30 feet (maximum depth). The table in Appendix A showing these locations also refers to them as "existing boreholes." Are these pre-existing boreholes, or will new ones be drilled? Does this difference in depth reflect the difference in the depth to basalt, or is some other variable responsible for this difference in probehole depths? Samples readings should be collected all the way to basalt. Figure 5 in the FSP appears to show these probehole locations, although the lettering is quite small and difficult to read; a larger figure with clearer print should be supplied so that sample locations are legible. Phase 1 should collect down hole radiation logging data to basalt in several locations throughout WAG 3-14, and Phase 2 should use this information to determine additional soil sampling locations. Text should clarify all these issues.

Of particular concern are previously discovered sources radiation in the vicinity of sources CPP-28 and CPP-79 (where high readings were found at depths of about 30 feet), at CPP-26 (where anomalous Cs-137 readings have been detected), and CPP-31 (where an estimated 14,000 gallons containing 28,000 Ci were released). The extent of the high radiation at depth in this area does not seem to be sufficiently characterized. Further characterization should be planned, either for Phase I or Phase II of the Tank Farm Soils investigations, including more soil samples collected from depth in this vicinity. These levels of radioactive contamination likely pose an ongoing threat to groundwater, even if the area of contamination is relatively localized. The risk to

groundwater from these sources should be carefully evaluated. These sites are discussed below as specific comments.

In general, the sample locations, depths, analytical methods should be clarified, and text, figures, and tables should all agree. The total number of samples to be collected should be clarified. Finally, all proposed sample locations should be shown on a map or figure. (VR)

5. The assumption that the detection and mapping of gross gamma radiation fields will serve as a useful indicator for defining the extent of Tank Farm subsurface contamination is reasonable as a first approximation. However, some contaminants (e.g., Sr-90) possess chemistry differences and no gamma yield such that if one is using a Cs-137 as the contaminant indicator, serious errors can result (high concentrations of Sr-90 could exist in a region not indicated by the gamma map). One needs to understand the behavior of all principal contaminants (relative to the tracer nuclide) to accurately assess subsurface distribution. (JAM)

6. The objectives presented in Section 1.1 and restated later in the text include the statement that it is the purpose of this study to "Delineate the horizontal and vertical extent of contamination in the INTEC injection well and the surrounding aquifer and basalt/interbed matrix." The drilling and sampling program proposed in the Injection Well Field Sampling Plan (FSP) will determine the extent of contamination in the injection well and at the two locations identified in the FSP for monitoring well installation. These monitoring wells will provide data on contaminant concentrations adjacent to and at one location downgradient of the injection well.

The data collected at these two locations, along with the sampling results from the injection well, may not provide sufficient data to determine the horizontal extent of contamination in the basalt aquifer and interbeds, however. In the opinion of GF, is probable in the opinion of GF, that additional wells will be required to delineate the horizontal extent of contaminant plume(s) downgradient of the INTEC injection well. The objective statement in Section 1.1 should be edited to qualify the extent to which horizontal contamination will be determined from one presumably downgradient well location. (JR)

7. Specific Standard Operating Procedures (SOPs) are referenced in the text of the Injection Well FSP as opposed to describing sampling and decontamination procedures in the workplan text but the SOPs are not included in the appendix. No evaluation of the referenced procedures or techniques can be made as these procedures are not discussed in detail the text. (JR)

SPECIFIC COMMENTS

1. **Page vi, top bullet:** CPP-61, CPP-81, and CPP-82 are not included as no further action sites in the OU 3-13 ROD. These sites are categorized in the ROD in Section 4.9 as "New Soil Release Sites" and are only described in Table 4-1 as sites transferred to the OU 3-14 RI/FS because of lack of sufficient data to make a risk decision. (KI)

2. Section 1.3, page 1-12: A description of the scope of OU 3-13 RD/RA Groups 4 and 5 should be included in this section. This might also be a better section to describe the OU 3-13 RD/RA Group 1 interim action that is presently organized in Section 1.5.4. An explanation of the scope of OU 3-14 RI/FS activities is not complete without a discussion about the boundaries between and interactions with OU 3-13 RD/RA activities. (KI)

3. Section 1.5.1, page 1-16: It states here that as each tank is successfully closed as a HWMA/RCRA interim status unit, the tank will administratively be transferred from HWMA/RCRA to CERCLA and become part of OU 3-14. Until a closure plan and, if necessary, a post-closure plan for the tanks is reviewed and approved by the authorized program, we cannot speculate on the eventual status of closed tanks. (KI)

4. Section 1.5.2, page 1-16, paragraph 1: It states here that CERCLA documents are functionally equivalent to NEPA documents and that NEPA aspects that could be significantly impacted by the project are addressed. It should be clarified that DOE has responsibility for ensuring that NEPA requirements are incorporated into CERCLA documents. (KI)

5. Section 1.5.2, page 1-16, paragraph 3: If OU 3-14 modeling will consider tank residuals, there should be a more detailed discussion in later sections about the type of data that will be available to fulfill OU 3-14 objectives considering the timing of HLW & FD EIS decisions. (KI)

6. Section 1.5.2, page 1-16, paragraph 5: It states here that the CERCLA program will address the contaminated and abandoned piping that requires soil excavation prior to removal. All Tank Farm piping also needs to be addressed under HWMA/RCRA closure regardless of the process through which piping is accessed or removed. The regulatory agencies should be notified of planned removal of soil within the Tank Farm which is outside the scope of the OU 3-14 RI/FS or the OU 3-13 RD/RA through a Notice of Disturbance. (KI)

7. Section 1.5.4, page 1-19, paragraph 1, sentence 3: It should state here that the interim action will be implemented until OU 3-14 remedial action begins rather than when the remedy is selected considering the duration of time between remedy selection and remedial action. Also, a specific timeframe for interim action activities should not be estimated since the transition from interim action to final remedy is affected by the tentative schedule for tank closure activities (Figure 2-9). (KI)

8. Section 1.5.4, page 1-19, paragraph 2, bullet 7: Paving within the Tank Farm may not be included as part of the interim action because of load limitations within this area. (KI)

9. Section 1.5.4, page 1-20, last paragraph, sentence 2: It states here that it is anticipated that OU 3-14 Phase I characterization activities will be completed before the placement of the cover and surface sealing over the Tank Farm. This must be reconciled with the OU 3-13 Group 1 interim action construction schedule. (KI)

10. Section 1.5.4, page 1-20, last paragraph, sentence 3: How will repair of the surface coating resulting from OU 3-14 RI/FS activities be integrated with OU 3-13 Group 1 interim action maintenance requirements? (KI)

11. Section 2, General: This section should include a description of the Tank Farm fill material and liner. (KI)

12. Section 2.4.6.3, page 2-55: It should be clarified that the land use scenarios were established in 1995. (KI)

13. Section 3.1.1.6, pages 3-9 and 3-10: This section describes source CPP-26, where radioactive steam was released in 1964. Approximately 13 acres are estimated to have been contaminated by this release. Following the release, a soil sample was collected near the release point, which contained 520 pCi/gm Cs-137, 0.03 pCi/gm Pu-242, and other radioisotopes. Reportedly, the condensed steam from the release point was cleaned up at that time. Later, in 1992, as part of a Track 2 investigation, Cs-137 was found at CPP-26 at a maximum concentration of 6,460 pCi/gm. It appears that the only radiation logging planned in this vicinity may be from location CPP-A56, which is east of the eastern boundary of CPP-28. Given the high levels of radiation found at CPP-26, and the discrepancies between levels of contamination found in 1964 versus 1992 results (Cs-137 concentrations seem to have increased in soils), a figure showing CPP-26 in some detail, including the estimated location of the original point of release, and all past sampling locations, would be useful in correlating these results to proposed sample locations in the Phase 1 FSP for Tank Farm Soils. Also, with these high concentrations, and given the steam/liquid nature of the release, this CPP-26 release could result in groundwater contamination. (VR)

14. Section 3.1.1.8, pages 3-14 to 3-18: This section discusses source CPP-28, where liquid first-cycle uranium extraction raffinate wastes were released from a leaky line over an unknown period of time. The leak was discovered in 1974. Following discovery, soil was assumed to be contaminated to a depth of about 9 feet, in an approximately circular configuration with an approximately 9 foot diameter. Tank Farm upgrades, which occurred from 1993 to 1996, included excavation of portions of this source and other nearby sources. Soil at source CPP-79, at a point about 30 feet south of the leaky line, was found to have contaminated soils at a depth of about 30 feet, although soils above this were not contaminated to the same degree. Cesium-137 concentrations of $3.37\text{E}+7$ pCi/gm, and Strontium-90 at $5.41\text{E}+6$ pCi/gm, were detected at that depth at that time. These extremely high concentrations suggest a release of raffinate (such as at CPP-28), rather than the contamination expected from the CPP-79 release. It appears that the only radiation logging planned in this vicinity may be from location CPP-A56, which is east of the eastern boundary of CPP-28. More soil samples should be collected from this vicinity to determine the nature and extent of this source; also, please evaluate the threat to groundwater from this source. (VR)

15. Section 3.1.1.10, pages 3-19 to 3-21: This section describes CPP-31. Contamination was discovered at this source in 1975 during drilling operations. The source of this contamination was a November 1972 release of liquid radioactive waste via a corroded and failed underground line. An estimated 14,000 gallons were released; this waste was estimated to contain 28,000 Ci of fission products, mostly Cs-137, Sr-90, and Y-90. Soil samples were collected in 1975 for radionuclide analysis. This Work Plan reports data, as decayed from 1975 to 1992, as including: up to $2.19\text{E}+6$ Cs-137, up to $7.10\text{E}+5$ Sr-90, up to $1.5\text{E}+3$ Pu-239/240, and up to $9\text{E}+3$ U-235. Observation wells installed in the early 1980s found radiation readings up to 22,300 mR/hour. The available information (from the early 1980's), showed that most of the contamination was concentrated between 10 to 25 feet in depth. The characterization uncertainty section in the text acknowledges the uncertainty in areal extent, but not the uncertainty associated with the depth of contamination. Contaminants may have migrated significantly since the 1980's which is the last time that data was gathered; this time period reflects additional uncertainty with the available data. From the information provided in the Tank Farm Soils FSP, it does not appear that the data collected from Phase 1 of the Tank Farm Soil investigation will be sufficient to characterize this site, especially with respect to depth. Also, given the extremely high concentrations found in 1975, this site should be evaluated for impacts to groundwater. (VR)

16. Section 3-35, page 3-35, first paragraph: It states here that here that CPP-28 and CPP-31 contain 99% of the estimated surface source curie inventory. Modeling performed during the OU 3-13 RI/FS showed that these sites were drivers for the Sr-90 and plutonium expected to contaminate the SRPA above risk levels. Does the current sampling strategy allow for detection of hotspots the size of CPP-28 that could contribute disproportionately high contaminant concentrations to the aquifer? How will the need for targeted remediation within the Tank Farm be determined and how is this process accounted for in the present RI/FS strategy? (KI)

17. Section 4.1.2, page 4-3, "Area of Contamination": An area of contamination can be defined for use in managing remediation waste. The Waste Management Plan in the RI/FS Work Plan describes disposal of investigation derived waste. (KI)

18. Section 4.1.2, page 4-3, "Operational Interfaces", bullet 1: It should be added here that purge water and well water collected as part of the OU 3-14 investigation activities must meet SSSTF waste acceptance criteria. (KI)

19. Section 4.1.2, page 4-6, "Long-Term Land Use Assumptions", last bullet: The land-use assumption through the year 2095 (the 100-year scenario) is that INEEL will remain under government control. After 2095, residential development is a possible land use. Tank Farm closure decisions under HWMA/RCRA may limit land-use at this location, but we cannot make assumptions about land-use restrictions until after a standard for tank closure is approved by the authorized program. (KI)

20. Section 4.4, General: The DQO Process is a cyclical process that can be used repeatedly as new information becomes available that could affect the outcome of the decision process. For both the Tank Farm and the Injection Well, there are numerous Principal Study Questions (PSQ) included in the DQO process which may or may not be resolved through the proposed sampling program. It may be useful to use the DQO process again to assess whether the PSQ's were resolved; whether the PSQ can be resolved with the sampling design used; and whether a change in either the sampling design or PSQ is needed. (AD)

21. Section 4.4, page 4-9, paragraph 1: The text states that the goal of the characterization is to develop appropriate remedial actions that mitigate risk associated with contamination. What are the remedial action levels, where are they be found, and what are they based on? (AD)

22. Section 4.4.1.2, page 4-10, paragraph 6: The first sentence in this paragraph states "...0 to 10 m (0 to 10 ft) bgs..." should read "0 to 3 m (0 to 10 ft) bgs" to be consistent with the first bulleted item on this page. (AD)

23. Section 4.4.1.2, page 4-10, last sentence: This sentence states, "Because the Tank Farm is an operational facility, future leaks and spills are possible." Please relate this statement to the overall DQO process, and how it may impact this RI/FS Work Plan. (AD)

24. Section 4.4.1.3, page 4-12, AA-1b, B: The text states that "Insufficient data or data without high resolution are available and add uncertainty..." What is "high resolution" data? (AD)

25. Section 4.4.1.3, page 4-13, "Decision Statements", DS-1a: The text states "Determine whether the field screening methods have successfully identified all high contamination sites..." How was the level for "high contamination sites" determined? (AD)

26. Section 4.4.1.3, page 4-13, "Decision Statements", DS-2b: In the previous paragraphs, DS-1a and DS-1b, the text states that field-screening methods will be used to identify high-contamination sites. Will field-screening methods also be used for nonradionuclide contaminants and additional radionuclides in the soil or soil-pore water? (AD)

27. Section 4.4.1.3, page 4-14, "Decision Statements", DS-5: This paragraph states that the remedial action will be based on hydraulic, geochemical, and physical drivers, etc. However, this decision statement does not include potential remedial activities, such as removal. What are some potential remedial actions if contamination is found above action levels? (AD)

28. Section 4.4.1.6, page 4-19, "Develop a Decision Rule", DR-2b: Thallium was included in Section 4.4.1.3, Alternative Actions, Page 4-12, Paragraph labeled AA-2b, as one of the nonradionuclide contaminants in the Tank Farm soil. This contaminant should also be included in Section 4.4.1.6. which lists nonradionuclide contaminants in the Tank Farm soil. (AD)

- 29. Section 4.4.1.7, page 4-20, "Specify Tolerable Limits on Decision Errors", paragraph 3:** The null hypothesis states that "the true mean of a contaminant is greater than or equal to the risk-based action level...which is based upon the belief that the harmful consequences of incorrectly concluding that an action level is not exceeded when it actually is exceeded outweigh the consequences of incorrectly concluding that the action level is exceeded when in fact it is not." This null hypothesis suggests that part of this DQO process is to determine whether remedial action should occur. If this is a correct assumption, then remediation should be included in the alternative actions section of the decision process. (AD)
- 30. Section 4.4.1.8, page 4-20, "Optimize the Design", paragraph 1:** This paragraph states that a final decision on the remedial alternatives will be made by 2006; if this is part of the temporal boundary it should be stated in Section 4.4.1.5. Step 4- Define the Boundaries of the Study. (AD)
- 31. Section 4.4.2.2, page 4-24, "State the Problem", paragraph 1:** This paragraph states that there is uncertainty in characterizing "the residual contamination." Why does the residual contamination need to be characterized? Is it contributing to contamination of the SRPA, and thus posing a threat to human health? (AD)
- 32. Section 4.4.2.3, page 4-25, "Identify the Decisions", PSQ-1a:** What are the "unresolved issues" mentioned in this paragraph as they pertain to the Aquifer? (AD)
- 33. Section 4.4.2.3, page 4-25, "Identify the Decisions", PSQ-5:** Does "soil" mentioned in this paragraph refer to soil in the Tank Farm or soil surrounding the injection well? (AD)
- 34. Section 4.4.2.3, page 4-27, "Alternative Actions", AA-5:** This paragraph states that "Data are adequate to characterize risk and the possible contaminants associated with the former injection well and Tank Farm soil to write an RI/FS..." Does this statement indicate that sampling must fully characterize both sites in order for the DQO process to continue? (AD)
- 35. Section 4.5.2, page 4-35, second bullet:** The Model Uncertainty Summary presented in the text discusses the uncertainty and model sensitivity associated with K_d , in particular for Sr-90 and Plutonium. K_d values were compiled and reported recently (March? 2000) by Grant Environmental for DOE in support of design work for the Interim CERCLA Disposal Facility (ICDF). The data presented in this report estimates a mean K_d value for Plutonium of approximately 1,500 which is lower than previously reported. The authors should specify the K_d value assumed in the previous 3-14 modeling and evaluate model sensitivity using the data presented in the Grant 2000 report. (JR)
- 36. Section 4.7.1.4, page 4-51, third paragraph:** The text describes the monitoring wells as "...being constructed with as many as three screened zones..." segregated by interbedded formations. Does groundwater elevation data indicate that there is insufficient head differential between the proposed screen intervals so that there will be no vertical migration of contaminant within the borehole. Alternatively, will the screened sections of the well be isolated from each other by well packers or some other device. Please provide additional details describing the three zone well

screen design. (JR)

37. Section 4.7.2.2, page 4-56, "Soil Moisture Monitoring Activities", paragraph 1, last sentence: Soil moisture monitoring is proposed as part of Phase II characterization. How will the presence of the Tank Farm coating that will be placed as part of the OU 3-13 Group 1 interim action affect moisture data needs?

38. Section 6, page 6-4, Figure 6-1, ID# 3: The duration of 33 days for 45 days review cycle indicates that working days are being used but holidays are not accounted for (i.e., 4th of July). Modify schedule to account for holidays. Although it is not significant for Agency review times it is important for accounting for field work and document preparation times. (WP).

39. Section 6, page 6-4, Figure 6-1, ID# 3, 4, and 5: Given that this schedule is used to derive the enforceable schedule, provision should be made for including the 20 day extension allowance in the FFA/CO. Documents like RI/FS Work Plans and Reports that are expected to either be complicated or lengthy should have the contingency review included in the enforceable schedule. (WP)

40. Section 6, page 6-4, Figure 6-1, ID# 7 and 8: Given that this schedule is used to derive the enforceable schedule, provision should be made for including the 15 day extension allowance to finalize a primary document in accordance with the FFA/CO. (WP)

41. Section 6, page 6-4, Figure 6-1, ID# 9:

No provision is shown for contracting nor completing necessary safety documentation prior to starting field activities. Also, nothing is shown to describe this activity in the program notes. No provision is shown for mobilization. Although the 140 days allowance for pothole probing activities is clearly a summary task, not identifying it on the schedule or stating the expected subtasks, would make future schedule exceedances difficult to justify. (WP)

42. Section 6, page 6-4, Figure 6-1, ID# 12: It is not clear as to how the timeframe for the radiation surveys was selected. They are scheduled to begin after probing and soil sample collection starts but end at the completion of collection and analysis of soil samples? (WP)

43. Section 6, page 6-4, Figure 6-1, ID# 13 and 16: This task is also a summary as it includes the collection, shipping analysis, reporting and QA of samples. Given that the FFA/CO allows 120 days for receipt of QA analyses results, the time period listed may not be appropriate for an enforceable schedule. (WP)

44. Tank Farm Soils FSP, Section 2.2, page 15: Table 1 lists the contaminants of potential concern evaluated in the OU 3-13 ROD. Based on characterization results presented for the various site locations, the choice of COPCs is not consistent with observed or expected contaminants. For example, one would expect Sr-90 to be a COPC for Site 15, and Am-241 and Pu-238 for Site 28. Associated contaminant radionuclides should be included in the COPC list. (JAM)

45. Tank Farm Soils FSP, page 18, Table 1: This table lists COPCs for Tank Farm Soil sources. Cesium-137 should be listed as a COPC for source CPP-16. (VR)

46. Tank Farm Soils FSP, Section 3.1.1, page 28: This FSP uses downhole radiation logging to map the subsurface distribution of gamma ray emitting nuclides within the Tank Farm soil. The text states that the results of this logging will be used to indicate contamination zones and direct future detailed sampling for additional COPCs. This is a useful approach if it has been shown that the contaminant source is constant (i.e. relative concentration of contaminants), and the relative mobility of contaminants is similar. However, this is not the case for the contaminant releases from this facility. Downhole logging in the vicinity of contaminated structures and piping complicates interpretation of soil data, and in most cases is limited to the deeper regions away from structures. Since considerable effort is directed towards this logging (with the understanding that complete characterization cannot be accomplished without sampling), please provide the rationale to support radiation logging versus the direct sampling approach to satisfy objectives. The sensitivity of the downhole logging is limited and does not provide the flexibility or dynamic range that sampling/analysis provides. The mapping of a large area/volume containing complex structures and varied contaminant releases can be characterized in a more definitive manner using sampling/analysis methodologies. The design of the FSP should respect the quality of information produced by alternatives and not duplicate effort at a future date. (JAM)

47. Tank Farm Soils FSP, Section 3.2, page 28: It is stated that downhole radiation logging measurements will be performed from ground surface to basalt. What is the purpose of the scan from ground surface to about 10 feet bgs? The vacuumed soil in this region will be scanned, and some locations sampled and analyzed, and some soil may not be returned to its original location (especially the 17 sampled sites). Also, will this 0-10 ft. logging serve as a pseudo-calibration check? (JAM)

48. Tank Farm Soils FSP, page 37, Figure 7: This table shows planned probehole locations in the tank farm, and identifies sources. Source CPP-26 should be labeled.(VR)

49. Tank Farm Soils, Section 4.2, page 33: The vacuum excavator operation and drum sampling should be described in more detail. A 5-foot increment represents about 15 liters of soil (5-in. diameter excavation). Placing this increment in a 55-gallon drum does not appear to be appropriate from a collection, handling and sampling perspective; this is a very small fraction of the drum volume. What procedures will be employed to insure the vacuum excavator system does not contaminate (cross contaminate) future soil removals? (JAM)

50. Injection Well FSP, Section 3.2.1, page 13, first paragraph: This paragraph describes the coring and sampling program to be conducted at the INTEC injection well. The text describes continuous coring through the sludge with composite samples being collected at intervals of 10 feet and that the coring will be done in five- foot increments. Please include information that describes how the samples will be taken from the two five foot cores and how the sludge composite will be mixed and sampled to provide a representative sample from each ten foot section of the sludge. Also, please include a description of the time between collection of the first and second five foot section of sludge and how the first sample will be stored until homogenation

with the second five foot section of core is performed.

In addition, the text states that discrete samples will be collected "...based on radiological field screening or visual observation." In the opinion of GF the text should be amended to read "and" visual observation instead of "or" . Field screening should also include, if possible, inorganic compounds known to be impacting water quality of the Snake River Plain Aquifer such as mercury.

Finally, the text states that groundwater samples will be collected, but does not say from which depths or how the groundwater samples will be retrieved. Please include details in the text describing these field activities. (JR)

51. Injection Well FSP, Section 3.2.1, page 14, first paragraph: The text states that two wells will be drilled to "...a depth of approximately 570 ft." and then that "The final depth of these wells will depend on the final depth of coring in the abandoned INTEC injection well." The text should include the details of how the final depth will be determined for the two monitoring wells, what data from the injection well will be evaluated in making that determination, and how the zones to be screened and monitored will be selected. (JR)

52. Injection Well FSP, Section 4.3, page 15, second paragraph: This section describes the proposed locating and drilling out of the 10-inch diameter casing using a 4-inch diameter bit to a depth of 450 feet below land surface (bgs). The text should include additional details of how the proposed drilling activity will insure that the 4- inch borehole will track inside of and prevent drilling through the side wall of the 10-inch casing especially in the sections of the well that have been previously repaired. (JR)

53. Injection Well FSP, Section 4.5, page 17, first paragraph: The text states that "No drilling or sampling equipment other than the sample container will come in contact with the sample..." Please provide details on how this will be achieved, for instance, will the core barrel be equipped with a liner that will keep the sample from contact with the core barrel. (JR)

54. Injection Well FSP, Section 4.7, page 18, first paragraph: The text states that sampling equipment will be "field cleaned between sampling runs." The text should include a description of this procedure in addition to providing additional details of the drilling equipment decontamination procedures discussed in this section which only mentions steam cleaning and references SOP. (JR)

55. Injection Well FSP, Section 5.3.2, page 22, last sentence: The text concludes this section with the statement that "Field accuracy will be determined for samples collected for laboratory analysis." Insertion of the word "only" (for samples collected) should be considered to clarify this statement that the field screening accuracy will be evaluated by comparison with samples selected for laboratory analysis and there will be no accuracy evaluation on those samples screened in the field and not selected for laboratory analysis. (JR)

56. Waste Management Plan, Section 5: A more specific discussion should be provided concerning the process that will be used for hazardous waste determination. How would contamination in the soil be linked to a specific process without the benefit of sampling? What sampling results would indicate that contaminated soil originated from a specific process? What assumptions would be used to influence the amount of sampling required to characterized the soil? (KI)

EDITORIAL COMMENTS

- 1. Page 1-4, paragraph 4, last sentence:** Figure 2-11 should be referenced instead of Figure 2-12. (KI)
- 2. Section 1.1, page 1-5, last sentence:** Figure 1-3 should be referenced in the opening rather than in the closing paragraph because specific buildings and tanks are discussed throughout this section. (KI)
- 3. Section 2.1, page 2-3, bullet 1:** The bullet should be removed from this paragraph because this text is a continuation of the bulleted section from page 2-1. (KI)
- 4. Section 2.1.1.2, page 2-8, paragraph 2, last sentence:** This sentence should refer to tanks WM-182 and WM-183. (KI)
- 5. Page 3-20, Figure 3-6:** Compass direction should be included with this figure. (KI)
- 6. Section 4.1.2, Page 4-1 through 4-6:** It would be less confusing if each heading in this section was organized with a separate number. There are other sections in this document that could use the same revision. (KI)
- 7. Section 6, Figure 6-2:** The summary level schedule is referred to in the text as Figure 6-2, but the figure itself is not labeled as such. (KI)